**PURDUE UNIVERSITY**

**REQUEST FOR ADDITION, EXPIRATION, OR REVISION OF AN UNDERGRADUATE COURSE**

(100-400 LEVEL)

**DEPARTMENT**: Engineering  
**EFFECTIVE SESSION**: Spring 2011

**INSTRUCTIONS**: Please check the items below which describe the purpose of this request.

1. New course with supporting documents
2. Add existing course offered at another campus
3. Exploitation of a course
4. Change in course number
5. Change in course title
6. Change in course credit type
7. Change in course attributes (department head signature only)
8. Change in instructional hours
9. Change in course description
10. Change in course requisites
11. Change in semesters offered (department head signature only)
12. Transfer from one department to another

**PROPOSED:**
- Subject Abbreviation: CE
- Course Number: 46700
- Long Title: Solid Waste Management
- Short Title: Solid Waste Management

**EXISTING:**
- Subject Abbreviation
- Course Number

**TERMS OFFERED**
- Check All That Apply:
  - Summer
  - Fall
  - Spring

**CAMPUS(ES) INVOLVED**
- Calumet
- Cont Ed
- Tech Statewide
- Ft. Wayne
- Indianapolis
- W. Lafayette

**CREDIT TYPE**

<table>
<thead>
<tr>
<th>Instructional Type</th>
<th>Minutes Per Mtg</th>
<th>Meetings Per Week</th>
<th>Weeks Offered</th>
<th>% of Credit Allocated</th>
<th>Delivery Method</th>
<th>Delivery Medium</th>
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</thead>
<tbody>
<tr>
<td>Lecture</td>
<td>75</td>
<td>2</td>
<td>16</td>
<td>100</td>
<td>Synchronized</td>
<td>(Audio, Internet, Live, Text-Based, Video)</td>
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</table>

**COURSE ATTRIBUTES**: Check All That Apply

- 1. Pass/Not Pass Only
- 2. Satisfactory/Unsatisfactory Only
- 3. Repeatable
- 4. Credit by Examination
- 5. Designator Required
- 6. Special Fees
- 7. Registration Approval Type
- 8. Variable Title
- 9. Remedial
- 10. Honors
- 11. Full Time Privilege
- 12. Off Campus Experience

**COURSE DESCRIPTION (INCLUDE REQUISITES):**

P: CE 35500 or permission of the instructor – Environmental Engineering or permission of the instructor. Comprehensive knowledge of solid waste management from the aspects of regulations, composition, collection, transfer and final disposal. Introduce the technologies of reuse, recycling, recovery, landfill, incineration and composting of municipal solid wastes.

**Signature**

Calumet Department Head  
10/10/11  
Calumet School Dean  
10-06-10

Ft. Wayne Department Head  
10/10/11  
Ft. Wayne School Dean  
10-06-10

Indianapolis Department Head  
10/10/11  
Indianapolis School Dean  
10-06-10

North Central Department Head  
10/10/11  
North Central Chancellor  
10-06-10

West Lafayette Department Head  
10/10/11  
West Lafayette College/School Dean  
10-06-10

West Lafayette Registrar  
10-06-10

**OFFICE OF THE REGISTRAR**
Required Course
CE 46700 – Solid Waste Management
Offered each spring

Catalog Data
Class: 3. Credits: 3.
Comprehensive knowledge of solid waste management from the aspects of regulations, composition, collection, transfer and final disposal. Introduce the technologies of reuse, recycling, recovery, landfill, incineration and composting of municipal solid wastes.

Prerequisites
CE 36500 – Environmental Engineering or permission of the instructor.

Corequisite
N/A

Required Textbook

Reference
Class handouts.

Course Objectives
1. To understand the regulations, composition, collection, and transfer of municipal solid wastes (MSW).
2. To apply knowledge of mathematics, physics, chemistry, and microbiology to design and analyze MSW disposal and treatment methods, including landfill.
3. To understand the major components in alternative solid waste management including 3R (reuse, recycling, and recovery), incineration and composting.

Schedule:
Two 75-minute classes per week.

Lecture Topics
1. Introduction to Solid Waste Management  1 class
2. Historical Perspectives and Regulations  1 class
3. Sources and Composition  2 classes
4. Property and Generation Rate  2 classes
5. Solid Waste Collection  2 classes
6. Processing and Transfer  2 classes
7. Landfill Siting, Design and Operation  4 classes
8. Closure and Maintenance of Landfills  2 classes
9. Reuse and Recycling  2 classes
10. Material Recovery and Processing  4 classes
11. Waste-to-Energy Treatment (Thermal Conversion)  2 classes
12. Composting and Other Treatments (Biological and Chemical Conversion)  2 classes
13. Selected Contemporary Solid Waste Issues 2 classes
14. Quizzes/Exams 3 classes

**Course Outcomes**

Upon successful completion of this course, students shall be able to:

1. Be able to analyze environmental, social, economical, and political information for municipal solid waste management. [e (2), h (9)]

2. Understand and be able to optimize the generation, collection, and transportation processes of municipal solid waste. [a (1), c (4), e (2), i (9)]

3. Select or construct appropriate treatment and disposal methods for municipal solid waste. [a (1), c (4), e (2), i (9)]

4. Be able to integrate science and engineering principles to design a landfill, the major disposal method for municipal solid waste. [a (1), c (4), e (2), k (6)]

5. Balance chemical reactions and use stoichiometric calculations to quantify leachate and methane gas generation, and thermal values of municipal solid waste. [a (1), c (4), e (2), k (6)]

6. Learn how to characterize municipal solid waste, and familiar with reuse, recycling, and recovery schemes. [a (1), c (4), e (2), i (9), j (9), k (6)]

7. Understand selected contemporary global solid waste issues such as solid waste minimization, life cycle concepts and sustainable development. [h (9), j (9)]

Letters and numbers in parentheses refer to ABET outcomes and their correspondence BSCE/BSME program outcomes.

**ABET category:**

Engineering science: 2 credits or 67%
Engineering design: 1 credit or 33%